

**A Process for Signalling Cost Information upon
Connection Establishment and a Tariff Server Therefor**
Background of the Invention

The invention is based on a process for signalling cost information upon connection establishment in a telecommunications network and to a tariff server therefor according to the preambles of the independent claims.

5 So-called call handling in the exchange is known. The call handling process is very limited as it does not take the individual subscribers into account but merely determines the tariff rate globally according to criteria relating to time, date, distance and service used. However, this process permits the display of the costs on a charge meter
10 during the telephone connection.

15 Superimposed on the conventional communications network for circuit-switched connections is a so-called intelligent network (IN) with the aid of which, over and beyond the pure connection establishment, a number of other services can be provided. To use a specific service of this intelligent network, it is firstly necessary to dial a service code. The service code is necessary to reach a so-called service switching point (SSP) which switches the required service on the basis of the service code as so-called service transfer point (STP), then approaches a service control computer, the so-called service control point (SCP) which then controls the provision of the requested service. The SSP is the interface between the conventional communications network and the intelligent
25 network. STP and SCP are components of the intelligent network. A general description of an intelligent network
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A signalling network, which at the present time normally operates using Signalling System No. 7 of ITU-T, is also linked to or superimposed upon the conventional communication network. This signalling system and the associated signalling network are generally known under the abbreviation #7. This signalling system is also used in the intelligent network. The above mentioned service transfer point (STP) of the intelligent network here is identical to the identically abbreviated signalling transfer point (STP) of the signalling network #7. An advantage of the possible services in an intelligent network is the provision of individual bills relating to the costs of the connections. At the end of an IN connection, a call record containing all the important data for this call is created by the SSP and STP. These records are sent to the service management point (SMP), which, in addition to the statistics function, determines the charge information therefrom. In the SMP the reported results of the call or service can be linked with the charge metering by the service provider in order to produce a billing ticket therefrom.

The structure of the specific charge metering for different telephone services constitutes a key point for the network operators. The cost structures for connections are a fundamental means of distinguishing and differentiating
30 between the various service providers. The currently existing methods of determining and displaying costs are unsatisfactory. They cannot provide the relevant customer with information until after a connection has ended.

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35 Therefore the object of the present invention is to propose
a process which enables the subscriber in a

telecommunications network to be sent information about costs before and during a connection.

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5 This object is achieved in accordance with the invention by a process for signalling cost information upon a connection in a telecommunications network according to the theory of Claim 1 and by a tariff server according to Claim 5. The process according to the invention and tariff server according to the invention have the particular advantage
10 that the cost information is made available to the subscriber directly before and during a connection.

Brief Description of the Drawings

Further advantageous developments of the invention are disclosed in detail in the sub-claims and in the
15 description.

Detailed Description of the Invention

The sole Figure illustrates the construction of a network according to the invention. Figure 1 shows a data terminal 1 from which connections are made to an exchange 2. The exchange 2 contains functions of the SSP and of the SCP. The exchange 2 has a call handling function 6 and a CDR (call detail records)- generating function 7 as well as a cost communication function 8. The exchange 2 is connected to a service management point (SMP) 3. A tariff server 4 and a bill server 5 are arranged in the service management point 3. The service management point (SMP) is also
20 connected to external access units 9.
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30 Upon a connection establishment between the data terminal 1 of the subscriber and the exchange 2, the call handling function 6 receives the requested connection data. The call handling function makes an enquiry to the tariff server 4 about the tariff for the desired connection in a tariff enquiry 10. In the tariff server the charging rate
35 determination function 13 requests the desired tariff information in a database 14. Information about the

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subscriber and the subscriber's specific tariff conditions
 are stored in this database. Via the charging rate
 determination function 13 of the tariff server 4 the tariff
 server answers the enquiry from the call handling function
 5 6 with a tariff response 11. The call handling function 6
 forwards the tariff response 11 to the CDR generator 7 and
 the cost communication function 8 of the exchange 2. This
 cost communication function 8 sends the information
 directly to the subscriber's data terminal 1 via a
 10 signalling channel 15. In this way the tariff for the
 desired connection is communicated to the subscriber
 actually prior to the connection establishment. The
 information is also updated during an existing connection.
 The CDR generator 7 determines the units already consumed
 15 in the current connection. The CDR generator 7 is also
 connected to a bill server 5. In this bill server 5 the
 CDR units are collected, processed on the basis of the
 current tariff, and possibly intermediately stored. The
 information relating to the accrued units is forwarded to
 20 the tariff server 4 via a so-called hot billing channel 12.
 This information ensures that the current costs are
 available to the subscriber in the database. The current
 costs are then forwarded to the exchanges and to the
 subscriber by means of the tariff enquiry and tariff
 25 response.

The tariff server 4 also has various access facilities 9.
 Via a service centre 9 the service provider can access the
 tariff server 4 and adapt the current subscribers and their
 current tariffs. An access facility for a personal enquiry
 about current personal tariffs is also available to the
 subscriber in the telecommunications network. This current
 enquiry can be made using the data terminal or via the
 internet using a PC.

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